

ENVIRONMENTAL ASSESSMENT

ESTABLISHMENT OF A NEW AVIARY

at the

National Wildlife Research Center
Florida Field Station
Gainesville, Florida

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

January 15, 2004

I. Proposed Action

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Wildlife Services (WS), National Wildlife Research Center (NWRC), Florida Field Station (FFS) proposes to allow the University of Florida (UF) to build an aviary on FFS property located at 2820 East University Avenue in Gainesville, Florida. The new aviary would initially be used for a 5 year study conducted by the University of Florida to assess the impact of mercury contamination on the life history of white ibis (*Eudocimus albus*). At the conclusion of the 5 year study, the aviary, without the ibis, would become the property of the FFS. The FFS would use the aviary in its research which focuses on finding alternative means of reducing conflicts between humans and birds including damage to crops.

II. Need for the Proposed Action

2.1 Impact of Mercury on Bird Species in the Everglades

Mercury is well known for its toxic effects in most, if not all, organisms. While the effects of mercury have been intensively studied in humans (Clarkson 1993), the effects of varying levels of mercury on wildlife are relatively unknown (Wolfe et al. 1996, Thompson 1996). One form of mercury, methylated mercury (MeHg), is considerably more toxic and likely to accumulate in the food chain than inorganic mercury (Clarkson 1993). The potential for conversion of mercury from inorganic to methylated forms is known to be accomplished by sulfur reducing bacteria typical in wetland or aquatic environments (Compeau and Bartha 1985, Gilmour et al. 1992). Fish-eating and aquatic birds are likely to be especially vulnerable to MeHg contamination in the environment, primarily because these animals are typically at the end of long aquatic food webs with very high potentials to accumulate MeHg (Frederick 2003).

The effect of MeHg varies depending on the dose. Wide variation in response to MeHg has been observed among animal species making it difficult to make predictions about levels of mercury exposure that can be tolerated without adverse effects (Wolfe et al. 1996, Thompson 1996). Limits that work for humans may not be suitable for wildlife because human exposure to contaminated foods or sediment is often much more limited than it is for wildlife, and because some species of wildlife may be much more vulnerable to MeHg than humans (Meyer 1998). In birds, MeHg is known to affect the central nervous system in adults and young. Acute MeHg poisoning is associated with reduced food intake leading to weight loss, increasing weakness, poor coordination, inability to fly or walk, and, in severe cases, liver and kidney disease and brain lesions. MeHg can also be highly toxic to bird embryos (Fimreite 1971, Stoewsand et al. 1974, Heinz 1996). For some species of birds, very low concentration levels of MeHg can result in eggshell thinning or death of the embryo (Heinz 1996, Scheuhammer 1987, Wolfe et al. 1996). In other species of birds, MeHg appears to have little impact on success of eggs (Vermeer et al. 1973, Fyfe et al. 1976, Koivusaari et al. 1980, Helander et al. 1982). There is also evidence indicating that mercury affects parenting ability in adults and survival of young and adult birds (Frederick 2003). As stated above, fish-eating birds are likely to have the greatest intake of and exposure to MeHg because of the tendency of this chemical to

accumulate in the food chain. Birds may also be especially vulnerable to MeHg in their diet because, in general, birds have high metabolic rates and consume large quantities of food relative to their body weight.

Biologists at the University of Florida have received a grant to study the impact of MeHg on white ibis under controlled conditions. The grant funds a 5 year study into the impact of varying levels of MeHg similar to that found in the everglades on the behavior, reproductive success, and general health of the ibis. Details of the research proposal are in Frederick 2003). In order to conduct the study, the University of Florida needs to build a new aviary to safely house the ibis. They have requested permission to build the facility on the grounds of the FFS. UF will fund construction of the aviary and will be responsible for obtaining all relevant state and local permits prior to construction.

2.2 NWRC Florida Field Station (FFS)

Primary emphasis of research at the FFS is on identifying, evaluating, and developing nonlethal methods to manage bird depredations to crops. This is accomplished through behavioral and physiological studies with captive wild birds at the FFS and through field trials in Florida, Louisiana, California, and elsewhere. Studies are conducted with the cooperation and support of WS Operations, growers' organizations, private companies, and state and federal agencies.

The FFS was built in 1963 and has continually served as a bird and mammal research station since that date. In June 1993, the Florida WS State Director's Office moved from Tallahassee to offices at the FFS. The 26-acre site is located 3 miles east of the University of Florida. There is a main building holding offices and laboratories, and 3 roofed outdoor aviaries for maintaining and testing wild birds. There are also eight 10 x 30 foot enclosures and two ½ acre flight pens where trials can be conducted throughout the year under natural environmental conditions (Fig. 1).

The proposed UF research would require facilities large enough to comfortably house a breeding colony of white ibis. The only pens of this size at the FFS are the two flight pens. However, the flight pens have a grass substrate which would permit mercury in the ibis waste to contaminate the soil on the site. Additionally, permitting UF to use one or both of the flight pens for the 5 years of their study would seriously impair the ability of the FFS to meet its objectives in identifying, evaluating, and developing methods to manage bird depredations. Therefore, the FFS is considering allowing the construction of a new aviary on FFS facilities. Construction of the new aviary would benefit the FFS because, when the aviary is turned over to the FFS, it will increase and improve the ability of the station to conduct research. Additionally, the 5 year study is likely to increase communication and collaboration between the FFS and UF and will improve research and educational opportunities for both organizations.

III. Alternatives

The following actions were considered as possible alternatives:

Alternative 1: Permit the construction of a new aviary at the FFS (Proposed Action).

Alternative 2: Do not permit the construction of a new aviary (No Action).

3.1 Alternative 1. Permit the construction of a new aviary at the NWRC Gainesville Field Station.

NWRC administrators determined that the preferred alternative is to allow for the construction of a new aviary on the FFS grounds. The aviary would be situated in a section of the facility that has few living trees because of an accidental fire in 2001, a tornado in 2002 and a beetle infestation that occurred between the fire and the tornado. Most of the trees are down with a few remaining snags (Fig 1). Therefore, few living trees would need to be cut to construct the proposed facility.

The proposed circular aviary would cover approximately 28,850 sq. ft. (approximately 195 ft. diameter; Figures 2 and 3) and would be divided into 4 separate sections for holding birds. Each section would contain a shallow wading pool capable of holding 6-8 in. of water. Each section would also contain a series of wooden poles designed to support perching and nesting. The aviary would have a packed sand/gravel base covered by an impermeable butyl rubber mat (like that used for lining ponds) and 2 layers of polypropylene landscape cloth (to protect the mat from foot traffic and photodegradation. Selection of this type of flooring instead of concrete would allow the FFS to readily remove the barrier and use alternate (e.g. grass) flooring for future research that would not have the same waste disposal concerns as the MeHg study. A series of poles will support netting which will form the walls and roof of the aviary. The center pole would be 38 feet tall and the perimeter poles would be 14 ft. tall. Coated poultry wire will surround the perimeter of the aviary to discourage entry by predators and rodents. The overall appearance of the aviary will be similar to that of a circus tent with netting instead of canvas. The actual diameter of the impact area for the aviary will be slightly larger than 28,850 sq. ft. because of the entry areas to each of the 4 quarters of the pen and the guy wires which anchor the poles supporting the net that covers the facility. In total, approximately three quarters of an acre will be cleared for construction of the new facility.

Drains located in each of the ponds and at the center of the aviary will be connected to the municipal sewer system. Utility and sewer lines will be run from the area north of the main office facility to the new pen along the route of an existing fire lane (Fig. 1). This fire lane will be further developed into a limerock access road to the site.

At the conclusion of the 5 year UF study, the facility, without the ibis, would be donated to the FFS for use in its research on methods to reduce human conflicts with birds including crop damage, damage to property, damage to natural resources (e.g. predation on T&E species), and risks to human health and safety (e.g. disease transmission, aircraft hazards).

3.2 Alternative 2. . Do not permit the construction of a new aviary (No Action).

Under this alternative, UF would have to seek a new site for its bird research facility. The FFS would receive no long-term increase in its capacity to conduct research on methods to reduce human conflicts with birds.

IV. Environmental Impacts.

The following issues were identified as being relevant to the proposed action. A summary of the impacts associated with the **Proposed Action** is available in Table 1

1. Impact on the Physical Environment
2. Impact on the Biological Environment
3. Impact on the Economic Environment
4. Impact on the Sociocultural Environment

4.1 Impact on the Physical Environment

4.1.1 Topography

The 26 acre FFS site slopes gradually from the Northwest to the Southeast. Construction of the aviary would cause minor impacts to the topography (leveling and grading), but natural drainage patterns would not be affected. Thus the **Proposed Action** would have minor effects on topography. The effects would be permanent. The **No Action** alternative would have no impact on topography.

4.1.2 Geology/Soils

Construction of the aviary would have negligible impact on the site soils and geology. The drainage system and hookup to municipal sewers would prohibit contamination of the soils with animal waste or chemicals used in research studies. Birds, eggs, and feathers that might potentially contain mercury would be taken off site for further analysis by UF and would not pose a risk of soil contamination. Additional mitigation measures would include erosion control such as silt fences and straw bales as needed and reseedling the site as soon as possible following construction. The **No Action** alternative would have no impact on geology/soils.

4.1.3 Water Quality

Neither the **Proposed Action** nor the **No Action** alternative would significantly affect water quality. This determination is based on consideration of the following aspects of water quality: local groundwater, lakes, streams, floodplains, wetlands, and surface drainage. There are no water bodies, floodplains or wetlands at the proposed construction site. The drainage system and hookup to municipal sewers would prohibit contamination of surface or groundwater with

animal waste or chemicals used in research studies. The trace amounts of mercury that would be passed through bird waste are within the allowable limits that can be handled by the Gainesville Regional Utilities (Pers. comm. Fred Williams, Gainesville Regional Utilities, July 2003). Birds, eggs, and feathers that might potentially contain mercury would be taken off site for further analysis by UF and would not pose a risk of environmental contamination. UF is responsible for the safe and legal disposal of all birds, eggs, and feathers.

Rainwater falling on the aviary and water from washing the facility would be directed to the drains and the municipal sewer system and would not be permitted to run off onto the site. Because of the relatively small size of the site, the natural drainages and water bodies would not be affected by the **Proposed Alternative**. The **No Action** alternative would have no impact on Water quality.

4.1.4 Air Quality

The **Proposed Action** would not significantly impact air quality. NWRC facilities are maintained in strict accordance with APHIS animal care and use regulations and are cleaned daily. Animal refuse would not accumulate on site, so animal odors would be negligible and would not impact use of adjacent properties. Minor temporary adverse impacts to air quality may occur during construction. Dust would be controlled as necessary by sprinkling or other routine construction procedures. The **No Action** alternative would have no impact on air quality.

4.1.5 Noise

Construction of the aviary would temporarily generate noise. Due to the relatively small scale of the project, this noise would be short-term and confined to normal working hours. Therefore, construction noise impacts should not adversely impact the residences on the west side of the NWRC complex. White ibis do not produce any loud noises, therefore the study conducted by the UF should not have any adversely impact neighboring facilities. It is possible that birds housed in this facility for subsequent FFS research may make noise. However, by this time, the vegetation to the West of the aviary should have recovered and, together with existing vegetation, would serve as a noise buffer for the housing development on the West side of the FFS complex. All FFS research activities would be conducted in compliance with all relevant Federal, State and Local laws. Additional NEPA analysis would be conducted if proposed future research activities are anticipated to have impacts in excess of those described in this analysis. The **No Action** alternative would have no impact on noise.

4.1.6 Transportation

During construction, there would be minor increases in the traffic on University Avenue which is the only access route to the FFS. Research activities are not

anticipated to result in an increase of more than 2-3 cars per day to the site. This level of increase should not have a noticeable impact on traffic on University Avenue. Parking facilities at the NWRC FFS are adequate to handle the additional traffic.

4.1.7 Utilities

Construction of the NWRC facility would cause no net effects on utilities such as energy, water, sewer, waste disposal, mail, or telephone services. Demand for such services is not anticipated to change substantially from current levels. The trace amounts of mercury that would be passed through bird waste are within the allowable limits that can be handled by the Gainesville Regional Utilities (Pers. comm. Fred Williams, Gainesville Regional Utilities, July 2003).

4.1.8 Land Use and Zoning

Existing land use would be affected permanently by conversion of the FFS site from woodland to aviary. However, because of the level of preexisting site disruption attributable to fire, tornado and insect damage, the impact at the FFS site is less than is likely in most alternative locations that UF may seek. Because the site is already owned by the FFS, it has been removed from use for purposes other than wildlife research for the last 40 years. The proposed aviary is consistent with current NWRC use of the site and with local zoning laws. The site is currently zoned Public Services and Operations. The Proposed Action would not have an impact on prime farm land.

4.1.9 Visual Resources

Implementation of the proposed action might temporarily change the existing visual environment on part of the FFS site. However, existing vegetation at the perimeter of the FFS would block most of the view of the aviary with the possible exception of the central peak. As the forest surrounding the aviary recovers from recent disruption, the view of the aviary would be further blocked from neighboring properties and, from the perspective of the FFS neighbors, the site would eventually return to conditions similar to those prior to construction.

4.2 Biological Environment

4.2.1 Plant Cover

The current FFS facilities are located within an area of pine flatwoods. The dominant plant species in the pine flatwood is loblolly pine (*Pinus taeda*) with an understory dominated by saw palmetto (*Serenia repens*) and wiregrass (*Aristida stricta*). The majority of pine trees on the construction site are dead, killed by a fire in 2001, a tornado that passed through the area in 2002, and/or a beetle infestation that occurred between the time of the fire and the tornado. Most of the

trees on the construction site are down with only a few remaining snags. Few living trees would be cut down for the new construction. This construction location was specifically selected because the extent of preexisting ecological disruption would minimize the need to disturb plant and animal communities. The U.S. Fish and Wildlife Service (FWS) has established that there are no threatened, endangered, or proposed plant species in Alachua County (USFWS 2003).

4.2.2 Wildlife

The FFS site does not support significant wildlife populations. No Threatened or Endangered species are found on the NWRC facility and the construction site is not suitable habitat for the T&E species listed in Alachua County. Therefore, the Proposed and No Action alternatives would have no effect on T&E species. Because of the relatively small size of the aviary and the extent of disturbance on the site, the Proposed Action would have a low impact on other wildlife species. The No Action alternative would have No Impact on other species using the site.

4.2.3 Human populations

The establishment of the new aviary would not result in a discernable impact on the human population. Employees working on the project are likely to be UF students or individuals from the local community and would not result in substantial increases in the local population.

4.3 Economic Environment.

Construction activities would provide a minor short-term economic benefit to the local community. All construction related costs would be paid by the UF and not by the FFS. When the site is turned over to the FFS at the conclusion of the UF study the capacity and quality of the research facilities at the FFS would be substantially improved with very little to no cost to the FFS. The **No Action** alternative would not provide this benefit to the FFS.

Research at the new facility would require supplies from the local community, but, due to the relatively small scale of the project, this benefit is likely to be very small and virtually imperceptible. Likewise, research at the new facility would create jobs for only 1-3 people and would also have a negligible impact on the local job market, economy, and tax base.

4.4 Sociocultural Environment

Research with animals takes place in a complex sociocultural environment. Nearly all people in today's modern society care about wild animals and particularly about the way animals are used or treated by humans. Public attitudes about wild animals are an important consideration to the WS program including WS methods development which,

under the proposed action, would be facilitated by the new research aviary. The sociocultural environment in which WS operates was analyzed in the WS (formerly ADC) programmatic EIS (USDA 997 Revised). In this EA, therefore, the analysis of impacts on the sociocultural environment focuses upon the proposed action.

4.4.1 Public attitudes

The basic public attitude question is whether the construction of additional research facilities at the FFS is desirable. Differences in opinion are likely to exist within the community. UF and FFS officials and researchers are likely to see the plan as beneficial. Although some members of the community are likely to support the need for research into the impacts of MeHg on wildlife and the NWRC mission to find alternative means for resolving human-wildlife conflicts, others are likely to oppose or question any captive animal research.

Some UF faculty and students would be involved in the MeHg study and would collaborate on future FFS research projects and would perceive the expansion of the research facilities at the FFS as a benefit. However, in all likelihood, given the relatively low magnitude of impact on the economic, biological, and physical environment, the vast majority of local residents would probably have no opinion about the new aviary. Most APHIS/WS clients who look to the NWRC to develop new methods for resolving human conflicts with wildlife would perceive the expansion of the FFS research capacity as beneficial especially given that the costs of construction would be paid by UF.

4.4.2 Historic and Archaeological Resources

Neither the **Proposed Action** nor **No Action** alternatives would impact historic landmarks, cultural landmarks or archaeological sites (Appendix B). No such sites have been identified on or near the location proposed for the new aviary.

4.4.3 Impacts on Children

As discussed above, the trace amount of mercury waste generated by the proposed action would be safely and legally be disposed of and handled by the municipal sewer system. All feathers and bird carcasses would be taken off site by UF for further analysis and would not contaminate the local environment. Visual impacts would also be minimal. All future NWRC research would be conducted in compliance with all relevant Federal, state and Local laws for the protection of the environment. Additional NEPA analysis would be conducted if proposed future research activities are anticipated to have impacts in excess of those described in this analysis. Therefore, the **Proposed** and **No Action** alternatives would not pose an environmental hazard to children.

4.4.4 Environmental Justice

There is a low income housing development adjacent to the West side of the FFS grounds. As discussed above, the trace amount of mercury waste generated by the proposed action would be safely and legally be disposed of and handled by the municipal sewer system. All feathers and bird carcasses would be taken off site by UF for further analysis and would not contaminate the local environment. Visual impacts on the site would be minimal. All future NWRC research would be conducted in compliance with all relevant state and local laws for the protection of the environment. Additional NEPA analysis would be conducted if proposed future research activities are anticipated to have impacts in excess of those described in this analysis. Therefore, the **Proposed** and **No Action** alternatives would not pose a risk to minority or low-income populations.

4.4.5 Impacts on Community Services and Recreational Resources

The Proposed Action would result in additional employment for only 1-3 individuals. This low level of impact is unlikely to generate any perceptible increase in demand for community services or pressure on recreational resources.

4.4.6 Educational Impacts

The UF's MeHg study would create educational opportunities for UF students and faculty. It would also increase collaboration between both organizations which would probably result in increased research and educational opportunities for UF and FFS staff. These opportunities would be severely limited under the **No Action** alternative.

Table 1. Summary of Impacts

The following table summarizes the impacts associated with the **Proposed Action**. The **No Action** alternative would not affect the factors listed below.

	<u>Proposed Action</u>	
	Impact	Duration
PHYSICAL ENVIRONMENT		
Topography	Low	Permanent
Geology/Soils	Low	Temporary
Water Quality	None	Permanent
Air Quality		
Construction	Low	Temporary
Operation	None	--
Noise		
Construction	Low	Temporary
Operation	None	None
Transportation	None	None
Utilities	None	---
Land Use/Zoning		
Existing Land Use	Low	Permanent
Prime Farm Land	None	---
Zoning	None	---
Visual Resources	Low	Temporary
BIOLOGICAL ENVIRONMENT		
Plant Cover		
T & E Species	None	---
Other Species	Low	Permanent
Wildlife		
T & E Species	None	---
Other Species	Low	Permanent
Human Populations	None	None
ECONOMIC ENVIRONMENT		
Employment	None	---
Construction Effects	Beneficial	Temporary
Business	Low	Permanent
Tax Base/Taxes	None	---
Federal Budget	None	---
SOCIOCULTURAL ENVIRONMENT		
Public Attitudes	Mixed	Permanent
Historic Resources	None	---
Impacts on Children	None	---
Impacts on Low Income and Minority Populations	None	---
Community Services	None	---
Recreational Resources	None	---
Educational Opportunities	Beneficial	Permanent

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APPENDIX A: LITERATURE CITED

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APPENDIX B

CONSULTATION WITH THE FLORIDA DEPARTMENT OF STATE

DIVISION OF HISTORICAL RESOURCES